USER GUIDE

# NI PXI-1045 Power Supply Shuttle

This document explains the installation and maintenance of the NI PXI-1045 power supply shuttle. The NI PXI-1045 power supply shuttle is a replacement part for the PXI-1045 chassis.

## Introduction

To minimize downtime caused by a power supply failure, the PXI-1045 chassis has a modular power supply shuttle. This power supply shuttle includes the chassis power supply, cooling fans, and fan-control circuitry. Key features of the power supply shuttle include:

- Universal AC input with automatic voltage and frequency ranging
- Over-current protection through push-reset circuit breaker
- Remote voltage monitoring and inhibit through a rear-panel connector
- Temperature-sensing module that can adjust fan speed based on air-intake temperature to minimize audible noise
- Circuitry to control a front-panel LED that indicates power supply failure

## Unpacking

Carefully inspect the shipping container and the power supply shuttle for damage. Check for visible damage to the metal work. Check to make sure all handles, hardware, and switches are undamaged. Visually inspect the inside of the shuttle for any possible damage, debris, or detached components. If damage appears to have been caused during shipment, file a claim with the carrier. Retain the packing material for possible inspection and/or reshipment.

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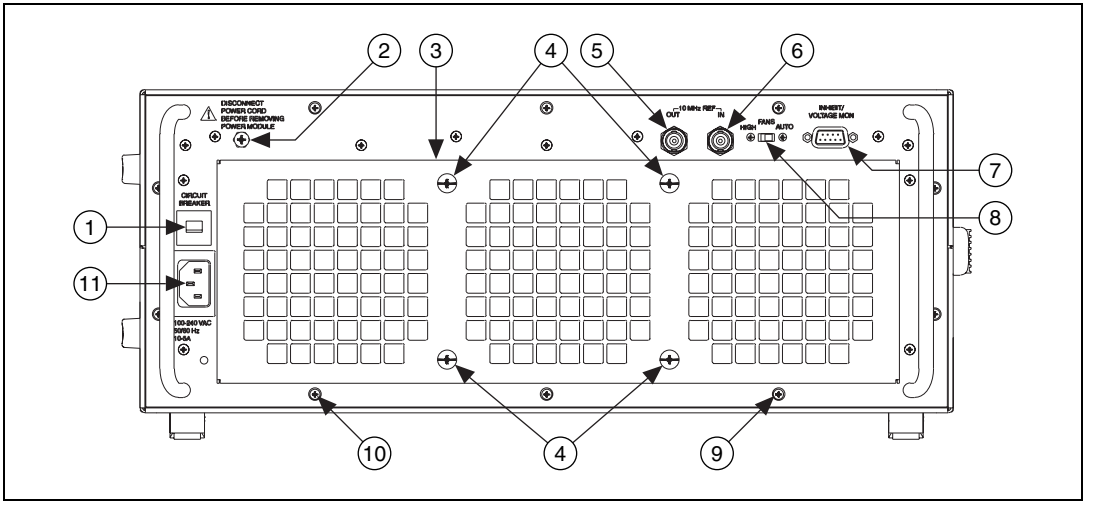
# What You Need to Get Started

To set up and use the NI PXI-1045 Power Supply Shuttle, you need the following items:

- ❑ PXI-1045 chassis (the unit being repaired)
- ❑ PXI-1045 power supply shuttle
- ❑ *Read Me First: Safety and Radio-Frequency Interference*
- ❑ *NI PXI-1045 User Manual* (provided with the chassis; also available at `ni.com/support`)
- ❑ Number 1 Phillips screwdriver

# Description

Refer to Figure 1 to locate user-accessible components on the power supply shuttle.




| | | | |
|---|---|---|---|
| 1 | Circuit Breaker | 7 | Remote Inhibit and Voltage Monitoring Connector |
| 2 | Chassis Ground Screw | 8 | Fan Speed Selector Switch |
| 3 | Filter Cover | 9 | Power Supply Shuttle |
| 4 | Filter Retainer Screws | 10 | Mounting Screw |
| 5 | 10 MHz REF OUT BNC | 11 | Universal AC Inlet |
| 6 | 10 MHz REF IN BNC | | |

**Figure 1.** PXI-1045 Power Supply Shuttle Rear Panel

# Installation and Maintenance

The information in this section is for qualified service personnel only. Read the *Read Me First: Safety and Radio-Frequency Interference* document included with your kit before using the power supply shuttle.

**Caution** Many components within the PXI-1045 chassis under repair are susceptible to static discharge damage. Service the chassis only in a static-free environment. Observe standard handling precautions for static-sensitive devices while servicing the chassis. Always wear a grounded wrist strap, or equivalent, while servicing the chassis.

**Caution** Always disconnect the AC power cable before cleaning or servicing the chassis.

**Caution** *Never* connect the AC power cable to the power supply shuttle until you install it in a PXI-1045 chassis. Do not use, test, or configure the power supply shuttle outside of a chassis.

The power supply shuttle is a replacement part for the PXI-1045 chassis. The *NI PXI-1045 User Manual* contains all of the most up-to-date chassis service procedures, including removal and replacement of power supply shuttles. The chassis includes a hardcopy of the *NI PXI-1045 User Manual*; additionally, you can download a softcopy from `ni.com/support`.

## Removal

Before attempting to replace the power supply shuttle, verify that there is adequate clearance behind the chassis. Set the power switch on the front panel to the Off (nonrecessed) position and disconnect the power cable from the power supply shuttle on the back of the chassis. Identify the 10 mounting screws that attach the power supply shuttle to the chassis. Refer to Figure 1 for the mounting screw locations. Using a number 1 Phillips screwdriver, remove the screws. Pull the two rear handles of the power supply shuttle to remove it from the back of the chassis.

## Installation

Ensure that there is no visible damage to the new power supply shuttle. Verify that the housing and connector on the new power supply shuttle have no foreign material inside. Remove the protective cap on the 10 MHz REF D-sub connector that interfaces with the chassis backplane. Install the new power supply shuttle into the opening on the rear of the chassis. Replace and tighten the ten mounting screws with a Phillips screwdriver (maximum torque of 5 in. lbs).

## Configuration

The fan-speed selector switch is on the rear panel of the power supply shuttle. Refer to Figure 1 to locate the fan-speed selector. Select HIGH for maximum cooling performance (recommended) or AUTO for quieter operation. When set to AUTO, air-intake temperature determines the fan speed.

## Connecting Safety Ground

**Caution** The power supply shuttle is designed with a three-position NEMA 5-15 jack that connects the ground line to the chassis ground. To minimize shock hazard, make sure the electrical power outlet you use to power the chassis has an appropriate earth safety ground.

If your power outlet does not have an appropriate ground connection, you must connect the premise safety ground to the chassis grounding screw. Refer to Figure 1 to locate the chassis grounding screw. To connect the safety ground, complete the following steps:

1. Connect a 16 AWG (1.3 mm) wire to the chassis grounding screw using a grounding lug. The wire must have green insulation with a yellow stripe or must be noninsulated (bare).
2. Attach the opposite end of the wire to permanent earth ground using toothed washers or a toothed lug.

# Specifications

## AC Input

Input voltage range .....100–240 VAC

Operating voltage range[1] .....90–264 VAC

Input frequency.....50/60 Hz

Operating frequency range[1] .....47–63 Hz

Input current rating .....10–5 A

Over-current protection .....12 A circuit breaker

[1] The operating range is guaranteed by design.

Line regulation

3.3 V..... <±1%

5 V..... <±1%

±12 V..... <±1%

Efficiency..... 70% minimum

Power disconnect..... The AC power cable provides main power disconnect. Depressing the front-panel power switch controls the internal chassis power supply that provides DC power to the CompactPCI/PXI backplane. You also can use the rear-panel 9-pin D-sub connector to control the internal chassis power supply.

## DC Output

DC current capacity ($I_{MP}$)

| Voltage | 0–45 °C | 45–50 °C | 50–55 °C |
|---|---|---|---|
| +3.3 V | 40 A | 37 A | 32 A |
| +5 V | 59 A | 55 A | 48 A |
| +12 V Peripheral slots | 8.5 A | 8.5 A | 8 A |
| +12 V System slot | 0.5 A | 0.5 A | 0.5 A |
| –12 V | 4.5 A | 4.5 A | 4.5 A |

Load regulation

| Voltage | Load Regulation |
|---|---|
| +3.3 V | <0.5% |
| +12 V | <0.5% |
| +5 V | <0.5% |
| –12 V | <0.5% |

Maximum ripple and noise (20 MHz bandwidth)

| Voltage | Maximum Ripple and Noise |
|---|---|
| +3.3 V | 50 $mV_{pp}$ |
| +12 V | 120 $mV_{pp}$ |
| +5 V | 50 $mV_{pp}$ |
| –12 V | 120 $mV_{pp}$ |

Over-current protection .....All outputs protected from short circuit and overload with automatic recovery when the short or overload is removed.

Over-voltage protection[1]

3.3 V .....140 to 150% above nominal output voltage

5 V, +12 V, –12 V .....120 to 130% above nominal output voltage

Power supply shuttle MTTR .....Replacement in under 5 minutes

[1] To reset over-voltage protection, remove the MAINS for 30 seconds and then power up.

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